

Applicant(s): Kei Yoshida
Serial No.: 09/743,837
For: A REFLECTION TYPE COLOR LIQUID CRYSTAL DISPLAY DEVICE HAVING SUB-PIXELS FOR INCREASING LUMINANCE, AND A LIGHT SCATTERING FILM INCLUDING COLOR FILTERS FOR THE SUB-PIXELS AND MANUFACTURING METHOD THEREOF
Filed: January 16, 2001
Examiner: Akkapeddi, Prasad R.
Group Art Unit: 2871

PHJ 99007

AMENDMENTS TO THE CLAIMS:

Please amend claims as follows:

1. (currently amended) A reflection type color liquid crystal display device for displaying a color image formed based on unit pixels each comprising sub-pixels corresponding to primary colors by using extraneous light, which comprises:

a liquid crystal layer varying a state of light transmitted therethrough in accordance with electric field applied thereacross;

a reflection layer reflecting light which is incident thereon via the liquid crystal layer;

a transparent electrode layer and a pixel electrode layer for applying electric field to the liquid crystal layer for each of the sub-pixels in accordance with an image to be displayed, the transparent electrode layer located on and in contact with a side of one main surface of the liquid crystal layer on which extraneous light is incident, the pixel electrode layer located on a side of another surface of the liquid crystal layer on which light reflected from the reflection layer is incident;

a light scattering layer located toward a front side of the display device, said light scattering layer having at least some microscopic asperities on its surface; and

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a color filter layer divided into at least two portions, each portion in correspondence with the sub-pixels and having an appropriate optical filter part for coloring (or transmitting all light components), wherein at least one portion performs coloring for the primary colors and at least one additional portion filters or transmits light components of predetermined wavelengths.

2. (previously presented) The device of claim 1, wherein the color filter layer is located on a side of the one main surface on which extraneous light is incident.

3. (previously presented) The device of claim 1, wherein the color filter layer is located on a side of another surface of the liquid crystal layer on which light reflected from the reflection layer is incident.

4. (previously presented) The device of claim 1, wherein light components of predetermined wavelengths are white light.

5. (previously presented) The device of claim 1, wherein the reflection layer and pixel electrode layer are in the same layer and in common.

6. (currently amended) A light scattering film capable of being used in a liquid crystal device for displaying a color image on the basis of unit pixels having sub-pixels

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corresponding to primary colors, wherein the light scattering film comprises:

at least two portions, each portion in correspondence with the sub-pixels and having an appropriate optical filter part for coloring (or transmitting all light components), wherein at least one portion performs coloring for the primary colors and at least one additional portion filtering or transmitting light components of predetermined wavelengths; and

a light scattering portion being extended over the whole of the film,

wherein the at least one additional portion and the light scattering portion are together integrally formed from the same material.

7. (previously presented) The light scattering film of claim 6, wherein the light components of predetermined wavelengths are white light.

8. (currently amended) A method of manufacturing a light scattering film capable of being used in a liquid crystal display device for displaying a color image on the basis of unit pixels comprising sub-pixels corresponding to primary colors, wherein the method comprises:

a first step of forming ~~at least two portions~~ coloring portions on a support member while forming spaces for additional

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portions, each portion in correspondence with the sub-pixels and having an appropriate optical filter part for coloring (or transmitting all light components), wherein at least one portion performs coloring for the primary colors and at least one additional portion ~~filtering~~ filters or ~~transmitting~~ transmits light components of predetermined wavelengths; and

a succeeding step of filling the ~~space~~ additional spaces and forming a light scattering portion extended over the whole of the film, the light scattering portion and the at least one additional portion being together integrally formed from the same material.

9. (previously presented) The method of claim 8, wherein the support member is a transparent substrate located on a front side of a display screen in the liquid crystal display device.

10. (previously presented) The method of claim 8, wherein the support member is a transparent substrate which is located on a rear side of a display screen in the liquid crystal display device and on which a layer of driving element array and a reflection layer are stacked, and in that the coloring portions and the additional portions are formed on the reflection layer.

11. (previously presented) The device of claim 2, wherein light components of predetermined wavelengths are white light.

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12. (previously presented) The device of claim 3, wherein light components of predetermined wavelengths are white light.

13. (previously presented) The device of claim 2, wherein the reflection layer and pixel electrode layer are in the same layer and in common.

14. (previously presented) The device of claim 3, wherein the reflection layer and pixel electrode layer are in the same layer and in common.

15. (previously presented) The device of claim 4, wherein the reflection layer and pixel electrode layer are in the same layer and in common.